proper antecedence in the claim. The inclusion of the phrase "catalyzed cells" in the claims is quite clear in meaning. It is respectfully submitted that all of the objections to the specification and to the claims, as well as the §112 rejections of the claims have been rendered moot by the aforesaid amendments to the specification and claims. Withdrawal of these objections and rejections is courteously requested.

Claim 19, "as best understood" stands rejected as being obvious over the combination of Clawson in view of Narumiya et al. Claims 1-6, 9-12, and 16-18, again, "as best understood", stand rejected as being obvious over the combination of Clawson in view of Narumiya et al and further in view of Setzer et al '484. Claims 13-15, "as best understood", stand rejected as being obvious over Clawson in view of Narumiya et al, further in view of Setzer et al '484 and still further in view of Sheller. Claims 1, 7 and 21, "as best understood", stand rejected as being obvious over the combination of Clawson in view of Narumiya et al and further in view of Setzer et al '578. Claim 22, "as best understood", stands rejected as being obvious over Setzer '578 in view of Narumiya et al.

THE 35 USC §103 REJECTIONS

Claim 19 stands rejected as being obvious over the combination of Clawson and Narumiya et al. Clawson discloses a catalytic steam reformer and Narumiya et al discloses a catalytic converter for purifying burner exhaust gases. The Clawson reference uses a noble metal and/or nickel catalyst which is supported on a refractory carrier, the physical nature of which is not explained, except that it must be supported and confined by perforate screens. The Narumiya et al reference describes a ceramic foam support which has an activated alumina coating on it wherein the alumina coating is covered by a noble metal oxidizing catalyst. The smelly components and the CO in the burner exhaust being purified are oxidized, or burned, in the catalyst bed. The motivation put forth by the Examiner for substituting the Narumiya et al catalyst bed for the Clawson catalyst bed is to provide a catalyst bed which allows the fuel gas to always be in contact with the surface of the catalyst, to accelerate gas diffusion, and to prevent the direct passage of unreacted gas. It would appear that none of these problems exist in the Clawson reformer, and thus there is no motivation

to substitute the Narumiya et al catalyst bed for the Clawson catalyst bed. Furthermore, one would not be likely to use an oxidizing catalyst bed in a steam reformer for a hydrocarbon fuel gas. If one did make such a substitution, the result would be to oxidize or burn all of the hydrocarbons in the fuel gas, which would be an undesirable in a steam reformer.

In the final rejection, the Examiner has indicated that she is not relying on the entirety of the Narumiya et al reference which has been cited in rejecting each of the claims in this application. In the final rejection the Examiner states that she is only relying on part of the Narumiya et al reference, i.e., on the use of a cylindrical foam support for a catalyst bed and she is ignoring the remainder of the reference in question, i.e., the fact that the Narumiya et al catalyst bed is an oxidizing catalyst bed which burns hydrocarbons in an internal combustion engine exhaust. The reason for this selective analysis of Narumiya et al is of course because of the contents of the instant application. The Examiner is using the instant application as a guide which indicates to her what structure in Narumiya et al should be selected and what should be ignored. It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. See: In re Umbricht, 160 USPQ 15 (CCPA 1968). See also In re Wesslau, 147 USPQ 391 (CCPA). This rejection of Claim 19 should therefore be reconsidered and withdrawn.

Claims 1-6, 9-12 and 16-18 stand rejected as being obvious over the combination of Clawson and Narumiya et al in view of Setzer et al '484. The Examiner's characterization of details of the Clawson structure is incorrect. The fuel gas inlet line in Clawson is denoted by the numeral 219, not 208. The numeral 208 denotes the initial portion of the catalyst bed and is filled with a catalyst 214. The fuel comes from a source 217, passes through the line 219 and enters the initial portion 208 of the catalyst bed. Oxygen (air) enters the reformer 200 through a line 235 from an oxygen source 242. The air passes through a helical tube 232 which is disposed in an annular chamber which doesn't seem to numbered. The partially reformed gas stream

passes through the annular chamber and then passes into a second catalyst bed 262. Thus, the air stream in the helical tube 232 is disposed in heat exchange relationship with the partially reformed gas stream, but the fuel gas inlet passage 219 is not disposed in heat exchange relationship with the partially reformed gas stream. Thus, preheating of the fuel gas stream, as claimed in this application, does not occur in Clawson. We agree that Setzer et al '484 describes an autothermal reformer with a two stage catalyst bed. We do not agree that Setzer et al '484 describes a foam core catalyst bed as implied on page 10 of the office action. Setzer et al clearly describes a pelletized catalyst bed. See Claim 2 of Setzer et al.

The rejections of Claims 1-6, 9-12 and 16-18 contained in section 12 of the office action are thus flawed since they are based on an erroneous interpretation of the principal reference, Clawson. The claims in question have been amended to recite specific catalysts, which are not suggested in the cited combination of prior art. The Examiner refers to the need for "unexpected results" stemming from the claimed subject matter in order to overcome an allegation of obviousness. There is no requirement for unusual, unexpected or surprising results in Title 35 of the patent statute. See: Kansas Jack, Inc. v Kuhn et al 219 USPQ 857 (CAFC 1983). This rejection should thus be reconsidered and withdrawn.

Claims 13-15 stand rejected as being obvious over the combined teachings of Clawson in view of Narumiya et al and Setzer et al '484, and further in view of Sheller. The Examiner characterizes the Sheller reference as disclosing a "monolithic" catalyst bed. This is not correct. The Sheller catalyst bed is formed from a plurality of corrugated metal strips, and is not a one-piece (monolithic) member. The rejected claims are all dependent from Claim 1, and thus include all of the limitations of Claim 1. As noted above in connection with section 12 of the office action, the Examiner's analysis of the Clawson reference is erroneous, thus this rejection is also based on an erroneous interpretation of Clawson. The amendment of Claim 1 further limits Claims 13-15 in a manner which is not suggested in any of the cited references. This rejection should thus be reconsidered and withdrawn.

Claims 1, 7 and 21 stand rejected as being obvious over the combined teachings of Clawson in view of Narumiya et al and further in view of Setzer et al '578. In supporting this rejection of Claim 1, the Examiner refers back to the reasons for rejecting Claim 19 which are noted above. In response thereto, we will reiterate our argument relating to the rejection of Claim 19 and re-direct it to the subject matter of Claim 1. Clawson discloses a catalytic steam reformer and Narumiya et al discloses a catalytic converter for purifying burner exhaust gases. The Clawson reference uses a noble metal and/or nickel catalyst which is supported on a refractory carrier, the physical nature of which is not explained, except that it must be supported and confined by perforate screens. The Narumiya et al reference describes a ceramic foam support which has an activated alumina coating on it wherein the alumina coating is covered by a noble metal oxidizing catalyst. The smelly components and the CO in the burner exhaust being purified are oxidized, or burned, in the catalyst bed. The motivation put forth by the Examiner for substituting the Narumiya et al catalyst bed for the Clawson catalyst bed is to provide a catalyst bed which allows the fuel gas to always be in contact with the surface of the catalyst, to accelerate gas diffusion, and to prevent the direct passage of unreacted gas. It would appear that none of these problems exist in the Clawson reformer, and thus there is no motivation to substitute the Narumiya et al catalyst bed for the Clawson catalyst bed. Furthermore, one would not be likely to use an oxidizing catalyst bed in a steam reformer for a methanol or ethanol fuel gas. If one did make such a substitution, the result would be to oxidize or burn all of the hydrocarbons in the fuel gas, which would be undesirable in a steam reformer.

The only reference of the three, or perhaps five, references relied upon by the Examiner that suggests <u>any</u> start-up temperature for a reformer is the Setzer et al '578 reference which suggests in FIG. 3 a start-up temperature of about 1,250°F. The Setzer et al '578 reference system is thus apparently not able to operate at a system start-up temperature of 500°F, or anything even close thereto. As noted above the Examiner's analysis of Clawson is flawed, and the analysis of the start-up temperature suggested in Setzer et al '578 is likewise flawed. This rejection should therefore be reconsidered and withdrawn.

Claim 22 stands rejected as being obvious over the combination of Setzer et al '578 in view of Narumiya et al. The Examiner also refers to a Peters '780 reference, but does not explicitly rely on that reference in the rejection. Regarding Claim 22, the claim requires combustion of a portion of the fuel gas at a temperature of about 500°F to enable start-up of the reformer assembly. We have carefully reviewed the Examiner's reasoning for finding the 500°F start-up temperature somewhere in the combination of the references, but are at a loss to understand where the Examiner finds this start-up temperature, other than in the instant application. The only reference in the three, or perhaps four, references relied upon by the Examiner that suggests any start-up temperature for a reformer is the Setzer et al reference which suggests in FIG. 3 a start-up temperature of about 1,250°F. The Setzer et al reference system is thus apparently not able to operate at a system start-up temperature of 500°F, or anything even close thereto. The grounds for rejecting this claim are thus flawed, and the rejection should be reconsidered and withdrawn.

Respectfully submitted,

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